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# HOG CHOLERA IN PENNSYLVANIA

By

**R. M. STALEY,**

*Director Division of Transmissible Diseases*

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Hog Cholera is supposed to have made its first appearance in America in 1833 in the State of Ohio. It spread over the United States with the development of shipping facilities. In 1913 it existed in 52 of the 67 counties of Pennsylvania. This State is not heavily infested as compared with the recognized hog raising States. The 1912 Federal census indicates that there were 1,130,000 hogs in this State at that time. Records of the State Livestock Sanitary Board indicate that only .02% of the hogs of the State are annually exposed to infection with hog cholera. The total loss is seldom more than .008 per cent.

## SYMPTOMS AND LESIONS.

For practical purposes the disease may be divided into two forms; the acute and chronic. In cases of acute hog cholera the animal may die without the owner noticing any signs of illness. A post-mortem may be held and no diseased organs or tissues found. These cases are due to a very active form of infection. Death is due to septicemia caused by the hog cholera infection.

Animals affected with cholera of a chronic form present an entirely different appearance. These cases are most common and are easily recognized. The animal has a high fever, ranging from 104.5 to 107 or higher. There is a discoloration of the skin over the abdomen under the thighs, front legs and around the ears. The animal shows an inclination to bury itself under the straw and in cold weather arches its back, shivers and usually avoids the rest of the herd. The hind feet are kept close together or crossed. There is loss of appetite, diarrhoea or constipation, cough, rapid loss of flesh, difficult breathing, wobbly gait, gummed condition of the eyelids and sometimes a discharge from the nostrils. No one set of symptoms are always presented and to be relied upon to determine whether or not an animal is affected with hog cholera. Any of the above symptoms may or may not be present.

The skin of a hog that has died of cholera is usually red or purple. On opening the carcass blood is found in the tissue just under the skin. The lymph glands, or "kernels" as they are sometimes called by the stock owner, are swollen, inflamed and sometimes bloody. The lining of the chest and abdominal cavities may be inflamed and covered with small blood spots. The lungs and intestines are inflamed. In some cases the lungs show that the animal had suffered

from pneumonia, and along the inside of the intestines, button shaped ulcers may be found. The kidneys are inflamed and their surface is speckled like a turkey's egg.

In the first described, or acute cases of cholera, death is due to hog cholera infection alone. In chronic cases death is due to the presence of other organisms which are found in the normal hog's carcass but are kept in check by the animal's natural resistance. They overcome this resistance and cause tissue destruction and other symptoms of disease only when the animals' vitality has been reduced by the hog cholera infection.

### CAUSE.

The acute form of hog cholera is due to cholera infection which is a filterable virus. The organisms are so small that they cannot be seen under the most powerful microscopes. They pass through the finest porcelain filter.

The chronic form of hog cholera is due, first, to the filterable virus, but the conditions that are so noticeable are due to other bacteria: Principally *bacillus suispestifer* and *bacillus suissepticus*. The former, *bacillus suispestifer*, causes the ulcerations on the intestinal mucous membrane, the necrosis of tissue, and the swelling, inflammation, etc. of the lymph glands. The latter, *bacillus suissepticus*, causes the lung lesions.

It is not unusual for those who have had limited experience with hog cholera, to fail to recognize the disease in some instances. A number of hogs may die suddenly and practically no signs of disease will be found when a carcass is opened. Another man may lose a number of hogs all of which showed every indication of having pneumonia and the lungs are found affected when the carcass is opened. No other signs of disease are found and the inexperienced man would be led to believe that he was dealing with a contagious form of pneumonia or might term it, as was formerly the practice, an outbreak of swine plague. There is a third class of cases frequently found. The symptoms of disease shown before death, together with the findings when the carcass is opened. (such as necrotic areas, ulcerations of the intestinal tract, etc.) make up the case that is easily recognized as hog cholera.

### HOW HOG CHOLERA IS SPREAD.

Infection will live for a long time outside of the hog's body. Premises that have been occupied by infected hogs may be unsafe for other hogs for a number of months if the carcasses of the hogs have not been properly disposed of and the premises thoroughly cleaned and disinfected.

It is not necessary for a hog or pig that develops hog cholera to have come in direct contact with an animal suffering from the disease. It is easily carried on the shoes, clothes or hands of a person who has been caring for sick animals. It may also be carried by streams, dogs, cats, rats, birds, barnyard fowl, the man who goes from place to place castrating pigs, livestock buyers, the dead animal remover, stock cars, stock yards, stock yard manure or cattle from stock yards.

### TREATMENT—PREVENTION.

Since there is no known cure for hog cholera it is important that every precaution be taken to prevent the animals from becoming infected. Various drugs and combinations of drugs have been employed in the treatment of hog cholera and all have failed to cure sick animals or prevent well ones from becoming infected. All kinds of patent preparations have been put on the market and extensive advertised as sure cures or sure presentatives. They have failed to produce the results that their manufacturers claimed for them.

An animal in good physical condition can resist more infection than an animal in a run-down condition. A well balanced ration should be fed. Animals should have plenty of exercise, fresh clean water, shade in the summer, shelter in the winter, well ventilated and dry quarters. The premises should be kept clean. A liberal amount of air-slacked lime should be spread about the hog pens and hog lots frequently.

For toning up hogs that are not thrifty the formula developed and tried out by the Federal Bureau of Animal Industry in 1905, is suggested:

Wood charcoal, .....	one pound.
Sulphur, .....	one pound.
Sodium chloride, .....	two pounds.
Sodium bicarbonate, .....	two pounds.
Sodium hyposulphite, .....	two pounds.
Sodium sulphate, .....	one pound.
Antimony sulphide (black antimony).....	one pound.

Pulverize each ingredient and mix thoroughly. The dose is a large tablespoonful for each 100 pound weight of hogs to be treated. It should be given in the feed once a day.

Newly purchased animals, boars standing for public service, sows that have been away to be bred and animals returning from the shows should be kept in quarantine on an isolated portion of the premises for three weeks. If they are not showing any signs of ill-



ness up to that time they should be given a thorough scrubbing in a 2% Cresol Compound (U. S. P.) or 2% creolin solution (about two and one-half ounces of either to the gallon of water) and then placed in their permanent quarters. A hog owner should not visit premises where hogs are known to be sick, neither should he permit strangers in his hog pens or lots. Pens and lots should be so located that they do not border on a railroad or public highways. Dogs, cats, barn yard fowls and as far as possible rats should be excluded from the hog quarters.

If a sick hog is discovered it should be removed from the drove and placed in temporary quarters in an isolated spot. In winter it should be kept in warm, dry quarters and in summer the quarters should be cool and well shaded. If the animal recovers entirely in the course of a day or two it may be returned to the drove. However, if it does not respond to treatment and shows any symptoms that are suspicious for cholera or if additional animals are taken sick a qualified veterinarian should be called in order that there may be no time lost in finding out whether or not the animals are affected with cholera.

The object in removing the sick animals from the herd is to prevent the infection of the other animals, if possible. It, therefore, follows that the person taking care of the sick animal should not go near the remaining hogs and pigs. Another advantage in providing temporary quarters for the sick animals is that they can be burned if it is cholera.

If it is cholera the veterinarian will immediately report the case to the State Livestock Sanitary Board as required by law. He will give the name and address of the owner and the approximate weight of all apparently healthy hogs and pigs that have been exposed to infection. The report should be made over the phone or by telegram. To keep down expenses the telegram may read as follows: "State Livestock Sanitary Board, Harrisburg, Pa. Hog Cholera, Smith premises. Five thousand pounds. John Blank." Immediately upon receipt of such a report serum will be supplied free of cost, the veterinarian to be paid by the owner. In most States the owner must pay one to two cents per C. C. or on an average of about sixty cents per animal for serum, in addition to expressage and the veterinarian's fee. Pennsylvania owners must agree to submit a report of the results obtained from the vaccinations, observe the provisions of our quarantine order, properly dispose of the carcasses of all hogs and pigs that die upon his premises and thoroughly clean and disinfect his premises as instructed.

Report blanks and orders of quarantine are sent when the serum is supplied. One portion of the report blank is filled out by the veterinarian and forwarded to this office in order that a complete

history of the case may be placed on record. The second portion of the report blank is filled out by the veterinarian as far as is necessary to give his name, the date of vaccination, the number of hogs vaccinated, their temperature, weight, the serial number of the serum used and the amount injected into each animal. This blank is then placed in the hands of the owner and he is expected to finish filling out the blank and forward same to this office thirty days from the date of disposal of the last case of hog cholera. All that is necessary for the owner to do it to record in the vacant column whether or not each animal is dead or alive, sign, date and mail the blank. Space has been provided for each point that the owner is to cover.

The quarantine restrictions do not inflict a hardship on stock owners as it does not tie up other stock nor their products. It covers only hogs and pigs and the refuse from the hog pens and hog lots. The quarantine order is read and explained to the hog owner, then posted in a conspicuous place. This protects other stock owners who will be warned away. It requires the owner to keep his hogs confined and prohibits him from selling or otherwise disposing of any hogs or pigs while the quarantine remains in force, unless permission is granted in writing by the Board. The owner is expected to observe every possible precaution to prevent the spread of the disease. All manure, litter, etc., removed from the hog pens and hog lots must be burned or mixed with lime and spread on an isolated field where it will be plowed under as soon as possible.

The law requires that the carcass of any animal that dies of a transmissible disease must be buried, cremated or boiled. If cremated the entire carcass with all its parts and products must be reduced to ashes. If boiled it must be kept boiling continuously for at least two hours. If it is not practicable to either cremate or boil the carcass, it and its parts and products may be buried in a place that shall not be subjected to overflow from ponds or streams, and which shall be distant not less than one hundred feet from any watercourse, well or spring, public highway, house or stable. Carcasses must be covered with quicklime to a depth of not less than three inches, and the uppermost part of such carcasses shall not be within two feet of the surface of the ground when the grave is filled and smoothed to the level of the surrounding surface. The grave must be so protected that the carcass will not be accessible to dogs or other animals.

Disinfectants such as carbolic acid, bichloride of mercury, etc., have not proven satisfactory in destroying hog cholera virus in hog pens and lots. A thorough cleaning and disinfecting of hog premises can best be accomplished by scraping the walls and floors. The material gathered, together with all manure and litter from the hog

pens, should be burned or thoroughly mixed with lime and hauled to an isolated field where it will be plowed under as soon as possible. If the floors are old boards they should be taken out and burned. The earth under the boards should be taken off for several inches and treated the same as the manure and litter. If the floors are of earth only, several inches should be taken off, mixed with lime and turned under. The ceiling, walls and floors should then be saturated with a solution of Cresol compound, (U. S. P. Liquor Cresolis Compositus) four ounces to the gallon water. After this has dried the pens should be whitewashed with a solution of whitewash to which has been added chloride of lime in the proportion of one pound to three gallons. Air slacked lime should be thickly spread over the floor and ground.

The wagon and utensils used in hauling and spreading the manure, litter, etc., should be disinfected by repeated washings with a solution of cresol compound of the strength recommended above.

Cresol Compound or Liquor Cresolis Compositus solution can be made at home with little expense by taking 5 pounds good laundry soap and dissolve in a sufficient amount of warm water. Add one gallon of crude carbohc acid (should contain 95% cresilic acid) and stir well. Then add sufficient water to make 50 gallons. If possible apply with good force spray pump. Buy the crude acid from a reliable druggist.

Chloride of lime solution in the strength of one pound of chloride of lime to every three gallons of water used is a good disinfectant. In purchasing the chloride of lime be sure that it has been in an air tight as well as moisture proof package and that it contains at least thirty per cent. available chlorine.

In 90% of the instances where a number of hogs or pigs become ill and several die the losses may rightly be attributed to hog cholera.

It is very important that outbreaks of hog cholera be reported to this Board without delay, because the best results from the use of hog cholera serum can only be obtained when it is used upon animals that are not showing the recognized symptoms of the disease.

It is easy to understand why hogs should be vaccinated as soon as possible when we remember that hog cholera serum protects against the virus of hog cholera only. If time is lost you are not only fighting hog cholera infection but are fighting the other disease germs; the bacillus snipestifer, bacillus snisepticus, etc. Hog cholera serum will not check the action of these bacteria, neither will it aid the body in repairing the damages that they have done. This explains why the Board advises against the vaccination of hogs that are showing the symptoms that are recognized as symptoms of hog cholera. The majority of hogs showing these symptoms die in spite of any treatment, and those that recover would do as well without



serum. If the animals do recover it takes a long time to fatten them and it is a question if they will ever prove profitable. It must also be remembered that as long as a man keeps cases of chronic hog cholera he is keeping the disease active upon his premises because the sick animals throw off infection in their manure, urine, etc. It is a better proposition for the farmer to kill and properly dispose of all hogs upon his premises that are showing marked symptoms of cholera.

The fact that hog cholera serum will not cure animals that are affected and will not protect for more than a month or six weeks, unless the animals pick up a certain amount of infection at the time they are vaccinated, shows that the serum treatment has its limitations. The injection of sick hogs gives very disappointing results and not only wastes serum but discredits the veterinarian and the serum treatment. Hogs that are just becoming sick, whose temperature is just going up for the first time, may be injected with good results.

#### SERUM-VIRUS AND SERUM ALONE TREATMENTS.

The serum-virus, or double treatment consists in the injection of a small amount of hog cholera virus immediately followed by the injection of hog cholera serum on the opposite side of the body. The idea is to confer a permanent immunity in the animal treated. A small percentage of animals so treated die affected with hog cholera. Others develop a slight attack of the disease but recover. Most of the properly treated animals are not disturbed by the treatment.

The serum alone or single treatment, as the name implies, consists in injecting hog cholera serum only. Since cholera serum does not contain any disease producing material, is simply hog blood plus a little antiseptic, it can do no harm.

In States where great numbers of hogs are raised and where most every premise is infected with hog cholera no serious objection can be raised to the serum-virus or double method of combatting the disease. The hog owners are not infecting clean premises when they lose a few hogs or have a few mild cases of hog cholera develop following the serum-virus or double injections. Neither is it of such great importance if the animals that are treated by this method become permanent producers of hog cholera virus.

Pennsylvania has whole counties that are free from hog cholera and a great number of counties in which the infected district is very limited. In our worst counties not even a third of the farms have had hog cholera upon them. We are able to control or eradicate the disease by rigidly enforcing the sanitary precautions, quarantine restrictions and the use of the serum alone or single treatment. Therefore, we are not justified in using the serum-virus or double method broadcast in this State.

The law prohibits the injection of any disease producing organisms into a domestic animal in Pennsylvania, without permission from this Board. Therefore the use of the serum-virus or double method in this State is illegal except when carried out under permit from this Board.

If a man takes the necessary steps to have an outbreak of hog cholera upon his premises reported promptly the exposed animals will be vaccinated. The proper disposition of the carcasses of all animals that die or are destroyed and the thorough cleaning and disinfecting of the premises will stamp out that center of infection. If we use the serum-virus or double treatment we will not be killing the virus and will have to keep on vaccinating the young stock and newly purchased animals. This expensive procedure would have to be kept up indefinitely and a man would not only be harboring infection upon his own premises but would be a constant source of danger to his community and possibly to any section into which his hogs were shipped.

The following precautions should be observed by the farmers and stock owners of the State as it is to their interest to co-operate with the Board in its endeavor to control and eradicate hog cholera as well as all other transmissible diseases of domestic animals.

Don't buy hogs and pigs without careful inquiry in the community. If you find that person desiring to sell hogs has recently lost one, two or more animals, don't purchase but report to State Livestock Sanitary Board, Harrisburg, Pennsylvania.

Don't buy exceedingly cheap hogs and pigs unless you know positively that the owner has not recently lost animals but has some other good reason for sacrificing the animals.

Don't buy hogs from several different people and put them all together on your own premises or allow them to come in contact with your own hogs and pigs. Keep each lot to itself until two or three weeks have passed and then put them in their permanent quarters only after being sure that none are showing any signs of sickness.

Don't go near a premise where there are sick hogs and don't allow any one from a premise where there are sick hogs to visit your hog pens or hog lots.

Don't purchase hogs or pigs, for purposes other than immediate slaughter, at a public sale or stock-yards. If you own hogs don't go near hog pens at sales or stock-yards. After visiting such places your shoes, at least, should be washed with a disinfectant before entering your own hog pens or hog lots.

Don't take chances with a sick hog. Isolate any animal that shows any signs of being sick. If two or more animals develop the same symptoms call a qualified veterinarian. If your hogs are affected with hog cholera the sooner this fact is known the better chances you

will have to save some of your animals. Hog cholera serum will not cure sick animals but will protect well animals.

Don't waste money on patent medicines, hog cholera cures, etc. For additional information write to Dr. C. J. Marshall, State Veterinarian, Harrisburg, Pennsylvania.

The following regulations are in force to help prevent the spread of hog cholera in Pennsylvania.

Under authority conferred by the Act of July 22nd, 1913, P. L. 928, The State Livestock Sanitary Board has adopted the following regulations to protect and encourage the swine industry of this State:

1. Swine for purposes other than immediate slaughter must not be transported into or within this State in or on railroad cars, enclosures on vessels, ferry boats, automobiles, wagons or other vessels or vehicles which have previously contained swine, until after such cars, vehicles, vessels or enclosures shall have been thoroughly cleaned and disinfected.

2. All cars, wagons, pens, crates, yards, chutes and other vehicles or enclosures which have contained or have been exposed to diseased swine must be immediately cleaned and disinfected under official supervision.

3. Swine that have received the simultaneous treatment must not be brought into Pennsylvania for purposes other than immediate slaughter until a period of at least thirty days has elapsed since date of treatment. Such animals must be given an antiseptic bath and not again exposed to infection before being shipped.

4. Swine that are affected with a transmissible disease or have been exposed to infection with same within thirty days must not be brought into Pennsylvania.

5. All public stockyards and pens used for handling swine are considered infected with hog cholera. No swine shall be removed from them except on official permit.

Swine which are to be used for purposes other than immediate slaughter must not be removed from any such stockyards or pens to points within the State until after an official permit has been issued for such removal.

6. Swine which are diseased with hog cholera must not be moved except upon official permit.

7. Apparently healthy swine which have been exposed to hog cholera by contact with diseased swine; or by conveyance in infected cars, vessels or vehicles; or by confinement within stockyards or pens known to be infected; or otherwise exposed, may be transported within the State only upon an official permit.

8. All cases of hog cholera should be promptly reported to the State Veterinarian, Harrisburg, and the premises placed under quarantine.

Exposed swine not intended for immediate slaughter should be given the "single" or "serum alone" treatment as a preventive measure.

9. The carcasses of diseased swine must be disposed of in accordance with Section 20, Act of July 22nd, 1913, which reads as follows:

Whenever it shall be required to destroy or dispose of the carcass of any animal to prevent the spread of disease, such destruction or disposal shall be made by one of the following methods:

First: Complete cremation of the entire carcass with all its parts and products.

Second: Boiling the carcass and all its parts and products in water, or heating the same with steam at the temperature of boiling water, continuously during at least two hours.

Third: Burial of the carcass and all its part and products in such place that shall not be subjected to overflow from ponds or streams, and which shall be distant not less than one hundred feet from any water-course, well, or spring, public highway, house or stable. In burying such carcass it shall be covered with quicklime to a depth of not less than three inches, and the top of such carcass shall not be within two feet of the surface of the ground when such grave is filled and smoothed to the level of the surrounding surface. Such grave shall be so protected that the carcass may not be accessible to dogs or other animals.

10. The "double" or sero-simultaneous treatment must not be administered to swine until after a permit shall have been obtained from the State Livestock Sanitary Board.

Such permits will be issued only when precautionary arrangements can be made to prevent the dissemination of the disease and the treatment must be administered under the supervision of an especially designated agent.

All swine which have been given the "double" treatment must be isolated and kept in quarantine until officially released.

Before release from quarantine they must be given an antiseptic bath with a two per cent. solution of cresol compound U. S. P. or other officially approved disinfectant.

The premises occupied by the treated swine during the immunizing period must be thoroughly cleaned and disinfected before release of quarantine.

11. No permits as above enumerated shall be valid unless expressed in writing and signed by a member, officer or agent of the State Livestock Sanitary Board.

C. J. MARSHALL,  
State Veterinarian.



Section 40—Act of July 22nd, 1913:

The State Livestock Board shall be charged with the enforcement of this act, and shall have the power to make all needful rules and regulations for the enforcement thereof.

Section 39—Act of July 22nd, 1913:

Any person, firm, or corporation that shall violate any of the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof shall for the first offense be sentenced to pay a fine of not more than one hundred dollars. For each subsequent offense such person, firm, or corporation shall be sentenced to pay a fine of not more than five hundred dollars, and, in addition thereto, such person, or each of the members of the firm or each of the directors of the corporation, as the case may be, with guilty knowledge of the fact, may be sentenced to undergo imprisonment in the jail of the proper county for a period of not less than ten nor more than ninety days, or either or both, at the discretion of the court.





